The Madras Forest College Magazine.

Vol. XXI. SEPTEMBER 1936. No. 1.

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THE

Madras Forest College Magazine.

(PUBLISHED QUARTERLY).

Vol. XXI. SEPTEMBER 1936. No. 1.

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A Ranger's Experience in conducting Forest Cases.

Winning Essay for the " Indian Forester Prize " for Past Students of the Madras Forest College,

By,

Mr. T. D. Ponniah, M. R. Hons., Range Officer, Kuttalam.

My experience is over a period of 23 years, and I consider it somewhat out of the ordinary, in that I have figured, on behalf of the Department, as a complainant or respondent—the latter in appeals against the Department,—in courts, ranging from the Bench Court to High Court in Madras. I wonder whether any other Ranger in the Presidency has had to appear in the High Court of Madras, to help the Public Prosecutor to defend appeals against the Department! I think not.

Forest cases are generally simple in nature—but I think, I have had the fortune or otherwise, of having had to deal with more than an ordinary Ranger's share of complicated case. It is these, that took me to the High Court. More of it, later.

During this month of May—I have appeared in a Sub-Divisional Magistrate's Court to conduct prosecution in Forest cases—three times and in a Sub-Magistrate's Court for the same purpose twice. I have been ruminating over this subject for more than a month. So, certain statements I make here are made with the belief that they may make the readers and authorities think and thus lead to .improvements, and not in a spirit of cavil.

From the early years of my experience, I have felt that a forester or Deputy Ranger—I began life as one and the species was killed out by the re-organization of Mr. Cox in 1919—or even a Ranger is very ill-equipped both inwardly and outwardly, to effectively conduct forest cases in court. With a little more attention, much can be done to improve matters.

To begin with outward equipments or the want of the same, any ordinary observer in a court will not fail to be struck by the fact that forest officials including watchers and guards, are not dressed in such a way as to impress either the court or the vakils or the onlookers. We have very often to put in the 10 Rupees watcher who is nothing more than a cooly as an important witness in Forest cases. Is there a paralled to this either in the Police or in the Excise Deparments—the only two other Departments of Government which have cases to prosecute? The watcher has no uniform. He is usually shabbily dressed. The importance of an impressive dress is well known. It has been recognized from early times. Adam and Eve even wanted a dress when there was no body else to admire them. In *Oliver Twist*—Dickens says—the difference between the Nobleman's son and the baby boy born in a work house is in the dress. I think it therefore imperative that our watchers should be given one set of dress, at least, to make them presentable in courts.

The above remarks apply though in a lesser degree, to our guards and foresters also. I think these people should be given an extra set of dress, to be worn when attending courts only—, with brighter buttons and made-up and brighter turbans.

I think barely 5% of our guards and foresters,—in fact, even of Rangers know how to tie a turban decently. Supplying and insisting upon the use of made-up turbans is the remedy for this. I have, for a very long time, as the result of much experience been of the opinion that instead of Government supplying uniform to subordinates, they (the subordinates) should be asked to supply them themselves—according to specified departmental models. More care, then, will surely be bestowed on the up-keep and appearance of the uniforms and longer life of the same is certain to follow, besides better and neater appearance.

Regarding the outward equipment of the Ranger, I wish to say a few words specifically. He is supposed to be in rank equal to an Inspector of Police and somewhat more than an Assistant Inspector of Excise. But his uniform is in no way better than that of an ordinary Sub-Inspector of either the Police or Excise Department. Even a Travancore, Cochin or Mysore Ranger though not so well paid as a British Ranger is much better equipped outwardly. They wear Sam-Brown belts, brighter and bigger stars and so on. Excise Assistant Inspectors even wear shoulder belts, have two stars to wear on their straps and otherwise look better and more impressively dressed. A British Ranger looks in court, in every way like a Sub-Inspector of Police or Excise. The unwillingness of the Forest authorities even to endow a Ranger with a Monogram M. F. and to have decreed that the white metal M. F. letters are a distinction above those of the brown-coloured letters of the Forester, while even a Sub-Inspector of Police has a white metal M. P., shows that the authorities are far from realizing the importance of outward equipment for their subordinates. Excise Assistant Inspectors wear open coats. Probationary Foresters in the Forest College do also wear open coats. Why then the Department insists upon the infliction of a close coat with hooks for the throat portion of the collar,—in these unconventional days, when nudism is the newest cult—is a thing, I have been unable to understand.

I would, that all ranks insist upon a better outward equipment; clothes make the man, they say, and most of the "gentlemen" we meet now-a-days are tailor-made ones. Why should we be behind the times?

Inward equipments : Well, at best a Ranger's knowledge of law and proceedure in Courts is scanty and insufficient. This is a fact, often admitted; why is that so? One reason is that our cases are often simple, and uncontested. But times are changing. The days when vakils were costly and ryots were ignorant, have practically gone. A better knowledge of law and proceedure is surely a great desideratum, at least for the future.

The grounding, a Ranger gets in law, in the Forest College is rather poor. That is so, because the forest literature on law, that is at present available to students and professors is very limited. In the Ranges too, this dearth continues. Up to date I. P. C. and C. P. C. copies have not been come accross by me, in any of the Range offices, during the past 10 years. Books on Forest Case law are of course non-existent. In fact, nobody seems to have thought about them. Our Forest Manual and Range Administration Manual could be made very much more useful, if all forest case laws are incorporated in them. Some months ago, in the Tinnevelly Sub-Divisional Magistrate's Court, in an appeal against the conviction of the owner of some cows found grazing in a closed area in charge of the owner's grazier, the vakil for the appellant quoted a Bombay High Court ruling, to the effect that owners could not be charged. What the ruling is that when no one was in charge and when no permits were found on the grazier and when the area in which the cattle were found was close to pattahs, the clement of doubt about intentionally grazing the cattle comes in and the owner should be given the benefit of the doubt. Of course, my D. F. O. and myself remembered there were clear counter rulings by the Madras High Court. But searching in my office and in tbe District Forest Office, the ruling could not be got at. I had to beg a vakil friend to get at the same and in the meanwhile beg

the Sub-Divisional Magistrate for an adjournment of the case, to find out the rulings, in our favour. Those who have had anything to do with case-law will know, as Goldsmith knew in his time, that for almost all rulings of one court there are counter rulings or interpretations of some other court. It is our duty to get at them. That task is difficult and can be greatly simplified by the suggestion given above, that case law relating to Forest cases or allied cases should be incorporated in our manuals.

Another reason for this poor inward equipment is that we get little guidance, as the result of personal or practical experience, by those above. Directly recruited officers—in charge of Districts—I dare say, would very very rarely have had to conduct cases in court. We all know an ounce of practical experience is more in worth than tons of theory.

In 1915, I booked a notorious poacher. I was a Deputy Ranger, somewhat raw and my Ranger was a tanadhar promoted Ranger. So, I applied to the D. F. O. for engaging a vakil, on our side, since the poacher had a vakil, whom he had paid Rs. 150/- The D. F. O. cryptly replied " No difficult points of law are likely to arise in the case and therefore, no vakil was necessary ". But on the first day in court, though the Magistrate was a sympathetic and kind officer, I got so poopoed that at my own cost I engaged a vakil and won the case.

I have always thought the number of times Forest College Students are made to attend courts to see forest cases being tried, is not at all commensurate with the importance of the practice necessary to a Ranger in this matter. Students should attend courts at least twice a month and witness not only forest case trials, but other important cases in which prominent vakils appear. Even as a pastime, to listen to the cross examinatien of a witness by clever lawyers and to hear their arguments and the summning up of cases by eminent judges, few other pastimes could be compared; you really get more intellectual pleasure and more sharpening of your wits, that way, than by several other ways.

When in Denkanikota, between the years 1922, and 1924, I had a crop of Sandalwood theft cases ; in detection of one of them I had to use my revolver and threaten away a crowd. Two of these cases, in which about Rs. 4000 worth of Sandalwood was concerned, went to the Madras High Court for review. Mr. Adams, the then public prosecutor told me to dress myself in my best uniform and be present in court by his side. When I was dressed and ready he surveyed me critically and pouted his lips in depreciation. So my uniform and puny stars did not apparently impress him much. Justice Spencer was the reviewing judge and I was subjected to somewhat close questioning by him. Then and oftener, after that, I had thought how much more carefully I would have stood such examinations, had I been internally and externally better equipped.

I have appeared as a witness on Government side in a Civil Case too. Compared with the experiences in Criminal Courts and the firy cross examination one has to undergo often, experiences in Civil Cases are tame affairs.

I have appeared in Bench Courts to defend Forest Subordinates against whom complaints were prepared by people. In the same capacity, I have defended a Co-Ranger also. One thing one has always to remember is " Courtesy pays. " Also losing one's temper, is really a great loss in court.

Forest Fires.

" Apathy of the public is a handicap to the Department ",–nowhere can the truth of the above statement be so apparent as with forest fires in India Rarely has the man in the street any idea of the far reaching evil effects of forest fires on the country at large.

In ever so many localities in India the value of timber standing on the ground is a fraction of what nature could produce but for man destroying the natural growth by constantly burning the Forests. I say Man because almost all the fires are the result of man's ignorance, intention, or negligence. Think what a great economic loss it is to the country; bad, unsound hollow timber is not wanted on the market and this is precisely what happens when forest fires rage through certain areas year after year. The desired beneficial results from any system of treating the forests can never be obtained without the strictest fire protection. Pages and pages can be written on the evil effects of forest fires, but suffice to say here that recurring forest fires can turn the best of forest to practically barren desert, and it is needless to write about the tremendous loss to the country by such a transformation.

Until and unless a willing cooperation of the people is obtained, succesful fire protection is very difficult. And this co-operation and sympathy can be obtained only when the public realize the value and benefits of forests to the country and to themselves. A vast majority of the public in India still display great ignorance and carelessness with regard to forest fires. To give an example, only a few years back the forests forming the catchment area of Lake Tansa, which is situated about 65 miles north east of Bombay and supplies more than three fourths of the total water supply to such a big city with a population of over fourteen lacs, had to be completely closed down to all grazing aud shooting. The reason was that due to the many fires occuring there it was rightly feared that the water in the lake would decrease, and we can well imagine the harm caused

by such an occurence. And it had been reported that most of the fires in this area were due to the negligence and carelessness of shooting parties from Bombay and other places.

This shows an woeful lack of knowledge, and interest in forestry, displayed by the public. It never could have occured to these sportsmen how burning a few acres of grass to drive out spotted deer and other game, would affect the watersupply of a distant city. Indian forestry will go on suffering unless the public acquire a better knowledge of forestry and take greater interest in the preservation of forests than at present. On the other hand in countries where the public have realized the value of forest to the country and have learned to take an interest in forestry and understood its objects more or less, fire protection has been satisfactory.

Another equally important aspect of fire protection is the trial of forest fire offences. Magistrates cannot convict a man without sufficient evidence, though he may be the real offender, and besides detection of fire offences is not an easy task. And when often (even when there is no doubt as to the identity and guilt of the offender) he goes scot-free, it is disheartening to forest subordinates. But it has been shown in Bombay Presidency that where the Forest Officer is in a position to control the people, fire protection can be sucecssful. In the Surat Dang forests of Bombay Presidency, the Divisional Forest Officer is the Assistant Political Agent and hence has the powers of a first class magistrate also, and as in the past, offenders in fire offences were severely dealt with, now fires are very rare in the whole of 660 square miles of dry deciduous forests of the Dangs. The Dang Forests are leased to Government under a treaty with the Dang chiefs made in 1884. The inhabitants, Bhils and Dangis, were long accustomed to *Kumri* or shifting cultivation. by burning down forests, but they changed their wasteful methods aud settled down in villages. They soon learned to work the forest department and forest contractors, and now they earn over two lacs a year from forest labour

Due of their willing cooperation the Dang Forests are an example of perfect fire protection. And this example shows that forest people can be made to adopt different methods, of raising crops, from what they have been accustomed to do, by persuasion, and a sympathetic interest in their welfare, and punishment for wilful infringement of rules. As for the literate and more cultured class of people, living in big villages, towns and cities we can do no better than educate them into a forestry sense by the right sort of propaganda work. Public opinion is of great importance in forestry as in every other department and yet so far no attempts have been made at propaganda in towns and cities. In many foreign countries like U. S. A and Canada much money and energy have been spent and are being spent in forest propaganda, with the result that people recognise forests as having a real place in the economy of the country. In these countries forestry associations have been formed, for protection of forests against fire and other dangers, supported to some extent by subscriptions from private firms and individuals.

The problem of soil erosion is closely connected with forest fires, and is engaging an increasing amount of attention in various countries. There is a " Soil Erosion Committee " in Ceylon, consisting of representatives from various departments and profession whose purpose is to deal with problems connected with soil erosion, protection of bare slopes, water conservation and the like. I don't think India has any such representative committee to discuss what are some of the most impotant and urgent problems of the country.

It is not my purpose to go into a technical discussion on the subject of water conservation, but it is interesting and illuminating to note the opinion of Mr. S. C. Eaton, Chief, Engineer, Los Angeles County Flood Control District. Mr. Eaton an eminent hydraulic engineer and in charge of what is perhaps the largest single water conservation and erosion control project in the world, believes that vegetation covering

the watershed surfaces is the most valuable ally of the engineer, and that artificial works simply supplement the natural cover for the control and conservation of water. And in his own words "The relationship (of fires and their bearing on water conservation) is of such importance that 'the absence of fire denotes, the increase of water conservation, while the occurence of fire practically eliminates such conservation. There are no possible means of water conservation. That provided by nature and that provided by man and both are seriously affected by fire.'

And what doubt can there be about the validity of the above statement? History is full of instances of many fertile countries having become treeless and waterless deserts. Along the southern coasts of the Mediterranean sea and in Asia Minor traces of old irrigation works and prosperous cities are found in now waterless deserts. And why go far when there are instances of denuded barren rocky hills and dried up rivers and canals in many parts of India. And the commonest instances in so many areas, are the deep dry wells once full of water.

And therefore the public in towns and cities as well as the rural population must be given an idea of all this, for, without the whole hearted cooperation and support of the people, fire protection is indeed a difficult matter.

N. P. Choksi.

Fighting Capacity of the Grey Langur.

Years ago in Ganjam District on the Coramandal Coast a big male Grey Langur one of a big party of monkeys raiding the crops was seen being attacked by pariah dogs. Because he saw that he could not escape he threw up the sponge, burying his face in his paws on the ground: not a nice sight. This was *Pithecus entellus* the Common of Hanuman Langur and since that day I had rated his merits accordingly. (Yet *Pithecus Schistaceous*, the Hanuman of Jakko Hill, Simla, is a warrior, is he not ?)

I do not know the usual weight of 'Entellus'. Leaving the long tail out of account, big ones are 30 inches in length, and more.

Pithecus Johnii, the Black Langur of South India, weighs up to about 30 lbs. *Entellus* seems to be much bigger; anyhow not much lighter than a bull-terrier.

All this is meant to lead up to a story, reminiscent of " Jock of the Bush-feldt " and his adversary, the baboon.

One of the " Peter Dawsons " is a notable naturalist in South India. I will call him 'Peter', but he is Mr. E. S. Dawson, our Forest Engineer; and he is the happy owner of a fine bull-terrier. This 'Tambi "— 'Little Brother'— is a gentleman, and exercises great restraint towards " gentleman's dogs " often in the face of provocation.

Peter was at a forest rest-shed, near a village in Kollegal Taluk. (This is not far from Attikan, where Mr. Randolph Morris lives.) A male grey langur that had once been tame was tyrannising over this little village. He took just what he wanted out of the huts, was a terror to the pariah dogs, and probably no small danger to children. The Hindoo does not ordinarily like slaying a monkey himself; but when a monkey is a nuisance, he may get someone else to deal with it.

On a certain evening the langur came into the restshed and proceeded to take fruit off a dining table. Peter was at work in another room and he concludes that *Tambi* arose to deal with the situation.

The first sign of trouble was shrieks from *Tambi.* Hastening to the rescue, Peter found the monkey had got the dog by the two fore-legs and was wrenching them apart. (Try it on your dog very gently, and you will understand !)

Peter's entry made a diversion in which the monkey let go and retreated across the room, as his master caught *Tambi* up in his arms. Next instant the monkey had returned furiously to the charge ! He ran up Peter, and attacked *Tambi,* whom Peter released. *Tambi* did not let himself get caught a second time in the jin-jitsu hold ; and a battle began, and went on for several minutes, Peter thinks. Tables and chairs were overturned, and the fight raged over and under the campcot which soon presented a most bloody appearance ! Finally the Langur lay dead ; and *Tambi* sat down and licked his wounds. They required 22 stitches.

Thus a grey *Entellus* langur can be formidable. Once in a *sal* forest I measured the jump from tree to tree that a langur party had been taking. There was a drop of about 40 feet; and the horizontal distance was thirty feet. A certain amount of strength must be needed for such acrobatics, as well as 'agility'; so one can sympathise with poor *Tambi* when the monkey got off his trick " hold " on him and his forelegs were torn apart.

A. F. MINCHIN,
Ooty Club, 2-10-36.

On Forests and Public Relations and an Excursion to a Forest-village.

Introduction : With the prospects of a more democratic type of Government looming large before us, it has come to be increasingly realised that education of the public in the various departments of administration is an indispensable factor for effective administration. It fell to Lord Linlithgow—the far sighted politician that he is—to give proper impetus to the idea of trying to get into the confidence of the public by closer contact with it, inculcating into the minds of the people a proper democratic perspective, and making them realise that after all Government is their own : not an inimical body constantly at work, intruding into their rights and privileges, but a collective organisation functioning for the common good. With the pursuit of such a wise policy in the past, a good deal of unpleasantness could have been avoided, and whole hearted co-operation of the public secured in all Government functions.

Nowhere else is such a policy of so important and pressing a need as in Forest administration. The Forest Department has never enjoyed an enviable reputation. It has always been something of a paradox to the less cultured among us : with its pretensions to safe guard the interests of the public, on the one hand and its unflinching opposition to individuals freely partaking of ' Nature's bounty ", on the other. For no fault of its own, excepting the lack of any attempt to educate the public on its cardinal principles and objects, even its most beneficial acts have come to be looked upon as the wanton inflictions of an oppressive Government. In the absence of any effort on our part, to clear our position, the new constitution, instead of proving the boon that it is intended to be, will introduce insurmountable obstacles to the effective working of our forests. Quack politicians may not be wanting to spread false alarms and propagate false doctrines. Democracy can as much be defeated by these, as by the rule of money, physical force, army, or ' black-shirt '.

Good-will of the public is then, what we require. To secure this, it becomes incumbent on every Forest Officer especially Rangers and subordinates who hourly come into contact with the people to strive to educate and organize public opinion in the interests of sound Forest legislation. It is a happy idea that initiation into such propaganda work should be made part of our training in the Madras Forest College.

Excursion : On the 26th September, the Principal and the Second Senior Instructor took us on an excursion to Chinna Thadagam village to ascertain the nature of the relationship that exists between the villagers and the Forest Department, the Forest requirements of the people, their grievances etc., and to explain to them the aims and methods which underlie the working of the forests. A large number of villagers assembled in the *maidan* and we had a free talk with them on various matters of forest importance.

General : Chinna Thadagam is a fairly big village about 13 miles from Coimbatore, and is situated on the eastern side of a small valley in Bolampatty Range. The surrounding forest, known as the "Thadagam Reserved Forest" bears a poor, degenerate, scrubby type of vegetation, suggestive of continued abuse by man in the past.

Adjoining the Thadagam Reserved Forest, there are three Revenue villages consisting of 20 hamlets with a total population of nearly 10,000 people. An extent of 5,000 acres approximately is under cultivation, and owned by local ryots. About 25% of the peopie are without lands, and are entirely dependent upon daily labour. The lands are all under dry cultivation with single, annual crops of Cholam, Ragi, Dhal, Black-gram, horse-gram and to some extent cotton. For the greater part of the year, most of the people are thrown out of work, and depend upon labour elsewhere, or in the forest coupes. The latter is much more remunerattve, but cannot employ more than 60 or 70 coolies per day. On the whole, though there is not much unequal distribution of property, the people eke out a very

needy existence indeed, because of drought conditions in the major part of the year. We explained to them that the very poor stocking of their forests was mainly responsible for reducing rainfall, causing erosion all over and for lack of regulated water-supply in their streams.

Grazing : As the main source of manure for cultivation, cattle are a necessity to agriculturists. Every land-holder has a certain number of cows and bulls, ranging from 2 or 3 to over 200, according to his status. They number in all about 4,000, of which half the number are grazed in the village-lands, and the remaining partly in the Reserved Forests, and partly in the adjoining Moopil Nair's private forests. The grazing fee varies from 8 annas in Thadagam Reserve and Moopil Nair's forest, to Re 1/- in Anakatti Reserve. In the local Reserve, water is available for cattle only during January, February and March. For this reason, during the rest of the year, though grass is available thoughout, they have to go either to Anakatti Reserve or to the private forests, in both of which water-fecilities abound, but they choose the latter because the fee is only half that in the other. The villagers stated that if grazing fees were reduced to 8 annas in Anakatti Reserve, they would not find any necessity to send their cattle to private Forests.

Even in the case of Thadagam Reserve, when the total number of cattle exceeds 2,000, they are charged Re. 1/- each for the remaining cattle. Further grazing permits are issued for a specified number of bullocks and cows. These are not inter-changeable and when the cattle of one class die or are sold, grazing of cattle of the other class in their place is prohibited. This is an unusual practice with apparently nothing but greater revenue for its aim. The villagers strongly objected to this rule, and it is possible to sympathise with them.

Watering places are few and far between in Thadagam Reserve, and often the cattle have to be taken a long way for watering, the path skirting the closed fuel-coupe. The immediate neighbourhood of these water-holes naturally suffer the heaviest grazing. If they could be permitted, the villagers

are willing to make cowpaths through the coupes wherever necessary and fence them on either side to prevent the cattle straying into the coupes.

They represented that redress of their various grievances would induce them to graze all their cattle in the Reserved Forests only, and thus bring in greater Revenue for the Department. We explained to them that the admittance of a much larger number cattle than the vegetation would comfortably support led to a serious deterioration of the forest, and a consequent reduction of pasturage available, and that premature grazing of new flush, and especially uncontrolled grazing had been abundantly proved to be deterimental to the grazing grounds. Somewhat unexpectedly, the villagers admitted these points and agreed to collaborate with the department if desired, in an attempt at rotational grazing, if this could be found possible.

It was suggested to them that with profit to themselves and their cattle and little damage to the forests, they could stall-feed their cattle with Forest-grass. We drew their attention to the to the fact that *kolukattai* grass was being experimentally tried to see if it could be made available in large quantities for cutting and removing, and that if they also could assist the department, the grass could be cultivated in large tracts of forests, and be an abundant source of excellent fodder. This, we explained, unfortunately cost as much as Rs 25/- per acre, and hence required the collaboration of the cattle-owners for successful growing. But they would not be convinced of the evils of grazing or the advantage of stall-feeding, There is no doubt that at the back of their minds there remains considerable distrust of the department. They said that they feared that any collaboration on their part with the department to improve the grazing in the forest would merely be rewarded by the levy of higher grazing fees ! This reluctance is also understandable. In any case, they want a lot of persuading that the resources of the forests are not already ample for their needs, and that restrictions imposed are not mainly vexations.

Small Timber and Fuel: As good timber for house-building is not available in the local coupes, they get it from the Coimbatore Depots. They purchase small timber for agricultural implements from the coupe-contractors. They pay Re. 1–4–0 per cartload of fuel removed from the coupe, and with felling and transporting charges it comes to Rs. 5–4–0 per cartload. As the cost of jungle wood fuel (unsorted) in Coimbatore is only Rs. 5–8–0 or Rs 6 per cartload, this price appears to be high. This can be accounted for by the fact that the contractor is a Coimbatore man having a number of carts of his own for fuelwood-transport and charges very nearly as much for transport up-to Thadagam as to Coimbatore. The villagers pleaded that it was quite beyond their means to pay so much for fuel and that they should be allowed to collect dry fuel from the forest. We explained to them that such a concession was likely to be abused — as shown by past experience — by green trees being felled and allowed to dry for a time and removed later on as dry fuel. It was suggested to them that, if only for their *bonafide* domestic use, the Department might allot fuel coupes for annual working at nominal rates, provided some one among them would undertake the necessary contract, and hold himself responsible for its proper working. They replied that such a system could be in their interest only if the area was left entirely at their disposal to be managed as a Panchayat Forest, as otherwise one man could not control all the villagers and things would not be quite smooth between them and Forest subordinates. We pointed out to them that as, according to their own confession, the less law-abiding men among them might infringe the rules, in the absence of departmental control, with a Panchayat administration, the forests might be most indiscriminately exploited and finally destroyed.

Here we reached a deadlock. It is apparent that what is needed is organisation and the adoption of a cooperative spirit among the villagers themselves. At this point, the Rt. Rev. Bishop Pachenham Walsh, who has recently established an 'Ashram' in the locality and who had come to listen to the

conversation, remarked that the problem might not be insoluble, and that he would be glad to assist with his helpers in establishing a workable organization, and in inculcating a spirit of self-help among the people and of responsibility towards the forest. Although difficult, the problem is worth tackling if it will result in better protection to the forest as a whole.

Fire protection : Fires are of very infrequent occurrence in this locality. We commended the villagers on this fact and expressed the hope that they would see to the absence of fires in the future as well, because it would save a good deal of damage to the forest and indirectly, benefit cultivation.

Conclusion : This village is typical of most other forest villages. The people cannot appreciate the necessity for Forest protection. They honestly feel that the forests cannot be destroyed by unrestricted cutting of trees or by excessive grazing. For every tree they cut, they assert, half a dozen sprout and take its place. We took some of them to the adjoining forests, and the Principal tried to impress on them by actual evidence on ground, the evils of past abuses in forest-land, but they could not be persuaded to desist from the belief that the present condition was more in the nature of the forest itself than the direct result of any past mismanagement. It is probably not their fault ; no attempt has so far been made in the past to dispel their suspicions, and prejudices and to teach them what we are about for; and it would be too much to expect them to see eye-to-eye with us all at once. The blunder of our past will take years of patient preaching and practice to be made good. And it must be made good and as early as we can. With such ignorance and prejudice prevailing all over, we

cannot expect popular sympathy and good will to back up a sound forest-policy. For the building-up of goodwill, and a spirit of cooperation, we will have to go farther than even the arts of propaganda : a genuine spirit of service should pervade our entire organisation from top to bottom and should give " appropriate and satisfactory expression in the way all things done."

S. V. Venkataramanan, B. A.,
Senior Student, Forest College.

Ayyalur Camp.

By,

Rao Sahib V. N. Seshagiri Rao, B. A.

This year is marked by a change in the programme of the usual college camps. A new camp, Ayyalur, Madura Division, has been added to the existing camps, the principal objects being to study the thorn forests peculiar to several of the dry districts of the presidency, and the methods of regenerating the fuel forests that are tried there *viz* " Rab " and " Kumri ".

Ayyalur is the headquarters of the forest range of the same name, and is a railway station, on the Dindigul–Madura line. The forests in the vicinity are the chief source of supply of fuel to Madura town and contribute to the major portion of the revenue of the district uuder fuel.

General description of the forests.

The forests around Ayyalur are mostly open low jungle in which *Acacia planifrons* with its umbrella-shaped crown is conspicuous with thickets of other species of Acacias and many of the xerophytic species of the dry evergreen forests. Fleshy *Euphorbias* form the conspicuous part of the vegetation, associated with the plants of the *Capparidaceae*, *Rhamnaceae*, etc., such as, *Zizyphus*, *Capparis* sp, *Cadaba* (two species), *Maba* (two species), etc. *Acalypha fruiticosa* is the common undergrowth.

Locality factors. The mean annual temperature is about 80°. The rainfall is about 20 inches, the bulk of the rainfall coming in the north-east monsoon.

Soil. Most of the forest is on flat ground or low undulating hills, the soil being shallow and dry. In parts it is alkaline. In places where the soil is sandy, it is deep.

Methods of Regeneration.

Simple coppice is the method adopted for working these forests. It is obvious that continuous coppicing will result in

the death of stools and the impoverishment of the soil. It is aimed to enrich the crop by regenerating the annual coupes by " Rab " and " Kumri ".

Rab. The word " Rab " meant ' nursery bed ', as originally nursery beds were formed by heaping and burning all debris, such as leaves, grasses, dried cow dung etc. Later, the word came to mean the materials that are so burnt. Now, by ' rab ' is meant the method by which areas are regenerated artificially by sowing seeds on the ashes of the burnt debris. This system of regeneration includes the heaping of debris in lines along contours, burning, digging pits 2 ft. square and not less than 6 in. deep, mixing the soil with the burnt ashes, and sowing in them good selected seeds. The pits are also bunded below, to prevent erosion. Seeds of *Azadirachta indica*, *Albizzia lebbek*, *Albizzia amara*, *Acacia planifrons*, *Wrightia tinctoria*, etc. were tried. The results are very satisfactory and *Acacia planifrons* appear to thrive best. *Bauhinia racemosa* and *Chloroxylon swietenia* which are indigenous to these forests may also be tried with advantage as they are decidedly superior, both as fuel and timber, to the species that are now being tried.

The cost of regenerating an acre by this method is about Rs. 1–8–0. The department incurs the expenditure for pitting, bunding the pits and sowing alone. The contractor does the heaping of the debris free of cost.

Kumri. ' Kumari ' is the Canarese corruption of the Mahratta ' Kumbhari ' meaning ' hill slope of poor soil '. Kumri is the system of raising agricultural crops after clearing the area of all tree growth, burning the debris, and utilising the ashes thus obtained as manure. A crop or two are raised and then the area is left off and new areas are chosen for fresh clearance. This destructive system of cultivation appears to have been introduced by the Mahrattas from the north. Considering what has been said of the Mahratta devastation, it is only natural that the countries devastated by them should adopt

any form of cultivation which would give speedy crop, the destruction of which would in no way compare with the ruination of permanent cultivation.

This method of cultivation is taken advantage of by the department by introducing forest species with the agricultural crops The method followed here is as follows :— After felling a coupe, the area is handed over to ' Kumridars ' who clear the brush-wood, heap them 22 ft. apart and burn them. The tree species are sown in these lines. The kumridar is permitted to grow his crops in between the lines in return for heaping, burning the debris, and after-tending of the seedlings. This is a much cheaper and more satisfactory arrangement to the department than the kumri. But it must be remembered that for kumri, the demand for cultivable land must be great and people must be forth-coming to do with interest this sort of work. This system cannot be adopted on steep slopes, as it would result in erosions during the monsoons.

COLLEGE NOTES.

1. New Students : (1936 - 38 batch).

We extend our welcome to the new comers to the College, who are twenty six strong. The following is a list of them :—

S. No.	Name of Student.	Circle or State to which attached.
1.	S. Seshagiri Rao Naidu, B. Sc.	... Waltair.
2.	E. Jacob ...	... Bellary.
3.	C. Varadarajulu ...	... „
4.	K. N. Raghavachari ...	... Working Plans.
5.	G. M. A. Khuraishy, B. A.	... Salem.
6.	A. Olimuthu, B. A. ...	... „
7.	K. V. Banuchandra Pal, B. A.	... Coimbatore.
8.	K. Andiappan, B. A., (Hons.)	... „
9.	I. A. Fernandaz, B. Sc.,	... Ootacamund.
10.	S. M. Wagle, B. Sc. ...	... Bombay.
11.	A. A. Golandaz ...	... „
12.	L. H. Rodrigues ...	... „
13.	V. B. Koppikar, B. Sc. ...	... „
14.	S. R. Umbarjee, B. A. ...	... „
15,	P. H. Uttamsingh ...	... Sind.
16.	A. A. Menon ...	... „
17.	G. N. Mansukhani ...	... „
18.	Md. F. Hussaini ...	... Hyderabad.
19.	P. Inderson ...	... „
20.	S. H. Bagot ...	... Ceylon.
21.	P. Perera ...	... „
22.	Satgur Saran Lal M. Sc.	... Orcha.
23.	V. S. Holkar ...	... Indore.
24.	S. D. Misra ...	... „
25.	Bhagat Singh ...	... Indore (Private).
26.	K. Narayanamoorthi ...	... Travancore (Private).

2. Sirajuddin :

It may be recalled that owing to illness, student S. Sirajuddin of the '33 — '35 Division had to leave the College a few months before he could complete the course. Past students will be interested to hear that he has joined the Senior year course in August this year so as to complete his course.

3. Annual Athletic Sports, 1936.

The College Annual Athletic Sports were held on the 17th October. Senior student C. C Monnappa won the Richmond Cup with twenty four points, and broke the record for putting the shot. Student S. H. Bagot of the Junior Division broke the College (and Coimbatore) record for Javelin throw.

We offer them our congratulations. Particulars of the various events wiil appear in the next number of the magazine.

4. Ayyalur Camp :

There has been a change of camp programme for the Junior Division. As from this year, there is an additional camp at 'Ayyalur' of Madura Division, of about three weeks' duration, the period of stay at Mount Stuart being correspondingly reduced. A note on this new camp appears elsewhere in this number.

EXTRACTS.

1. Our Feathered Friends :

By,

Alejandro De Mesa

Of the Division of Forest Studies and Research,

Bureau of Forestry.

Geologists and Paleontologists have unearthed the fact that birds are evolved from reptiles which, millions of years ago, lived in the trees and about the rocks. These reptiles when in pursuit of prey or when attempting to elude their enemies, leaped and flopped down from a height, until in time they developed feathery wings and achieved true flight. Next to the insects these creatures were the first to soar from the land and make the air their own. Even now they are still the masters of the air, for these were the first birds.

Fossil remains show that the first bird was about the size of a crow. It had many teeth, and perfect feathers all over the body except on the legs and the beak. Instead of tail feathers, however, it had the fleshy tail of a lizard, composed of over twenty vertebrae with a pair of feathers growing out from each joint. Moreover, the wings bore strong claws with hooked talons which helped the bird to climb when it was not flying. By means of these and other evidences which rock and clay beds have yielded up, ornithologists can correlate the relation of existing birds with those of the past.

Present Birds.

Judging from the findings of the scientists in their search for truth, the splendid birds about us today are, therefore, the products of a continuous, though very slow, process of evolution. With the passing of time and through adaptation these birds have developed well-built bodies with light and strong frameworks, heavy muscles, thin skins and light feathers. The feathers of the wings and tails which are used for propulsion and steering, enable birds to soar, to hover and to flutter.

Temperature of Birds.

The feathers of the body serve as an unexcelled garment, which coupled with an active and deep respiration keeps the heat of a bird's body at a temperature of from 100 to 112°F.

The pulse of a bird when at rest is 120 beats per minute. Immediately after flight the pulse rate is much faster. To maintain this high body temperature, birds must and do digest enormous quantity of food.

Molting of Birds.

As man changes his worn-out clothes, so a bird molts or changes its feathers, losing its flight feathers either a few at a time or in some cases all at once, in exchange for fresh feathers to suit the season and to blend with the surrounding. Some birds put their plumage on only once a year; others twice, while still others even three times. Usually the males wear brighter colors than the females. Nature planned this scheme in order to better protect mother birds while they are nesting.

Cleaning and Fixing of Feathers.

Birds, like some of the higher animals, clean their bodies by bathing in water or in dust. Sparrows and chickens, for instance, often take dust baths by kicking their legs and wiggling their wings in order to work the dust all through in and over their feathers, after which they shake the dust out. Parrots, ducks, pelicans and a great many birds prefer to take water baths. After a bath and while preening, some birds apply oil to their feathers others used dust. In this way, the feathers are arranged and cleaned to their liking. Ducks and birds that swim and dive under water, when frightened, take to their wings at once. Flight is possible because of their feathers (their raincoats) which have been water-proofed from the oiling and dusting which they have received.

Important Uses of Beaks of Birds.

The birds are skillful in the use of their beaks and legs, which are variously moulded according to their habits, and to the influence of their environment. Man is dexterous in the use of implements of various sizes and shapes. Birds are equally skillful in the use of their beaks for picking food and for various purposes. Take for instance the following few common birds whose wonderful work with the use of their beaks is well known to keen observers. The kingfishers use the long, strong and pointed beaks as spades for burrowing and excavating the ground for nests and for shelter, and as lancets for puncturing holes in the heads of other birds. The barbets and the carpenter birds employ their stout beaks as hammers for knocking on trees to detect the location of grubs, and as chisels for boring holes. The swallows use their small bills as masons' trowels for

plastering their mud nests; the tailor birds use their long compressed tip bills as needles for sewing leaves together for their basket nests. Philippine weavers use their beaks for twisting implements for the weaving of basket nests. The eagles, the crows and the vultures use their hooked bills for forks and knives for tearing up or shredding meat. The pelicans and the swifts use their beaks for baskets for carrying food to their young. The Sun birds make siphons of their slender beaks sipping the nectar from the flowers. Sparrows, titmice, parrots and cockatoes use their short and very strong beaks for cracking seeds. The goat suckers carry and build their pebbled nests with their beaks. A great many birds manipulate their beaks like tweezers for breaking twigs and stalks of grasses for the construction of simple nests and shelters. All quarrelsome birds use their beaks as daggers for offence. Most birds use their bills as brushes for preening and oiling their feathers, In addition to these many uses of their beaks, the song birds, such as babblers, the thrushes, the dominicos, the martines, the siete colores, the canaries, etc., manipulate their beaks to produce the characteristic high note of each species.

Uses of the Legs of Birds.

The scaled legs of the birds, together with the toes that end with horny claws, differ in size and structure according to the various sizes of the birds. Besides the general use of the legs for supporting the body and for perching, the long legs of the herons, the jacanas, the cranes and the egrets are adapted to walking among tall grass and in shallow water. The ducks, the geese, the swans, the pelicans, the terns, the gulls and the Indian darters use their flat and webbed toes as paddles while they are swimming and diving. The short toes and slender legs of sandpipers, plovers and lapwings are adapted to wading, The well developed claws of hens, turkeys, peacock pheasants and quails are useful for scratching the ground. The two opposite pairs of toes of the warblers and the woodpeckers with their strong nails are used for climbing. Those of the parrots are used for holding food and for climbing. The strong feet and powerful curved claws of owls, eagles and crows serve for seizing prey. Those of the tabons are used for digging holes in the ground.

Nests of Birds.

Birds build various kinds and shapes of nests for the safety of their eggs as well us for nurseries in which to keep their birdies safe. The drongos build cupshaped nests of fine

twigs and roots; the swifts make nests out of their saliva; the thrushes make cup-shaped mosslined nests of leaves and rootlets; the swallows, saucer shaped nests of mud; the eagles, large massive and flat baskets of branches and twigs; the my-nahs, oval nests of grass and weeds; the carpenter birds and barbets use chips of wood placed in the holes excavated in tree trunks; the warblers, make bottle shaped grass baskets; the egrets, scanty structures of twigs in the tops of trees; and the bulbuls, deep cup-shaped nests of coarse grass, fibers and rootlets.

Care of the Nestlings.

With the exception of the young of the tabon and probably a few others, the young that hatch from the eggs are helpless. The parent birds give all possible care and devotion to their little ones. Happen what may they do not forsake their charges. To care and feed their birdies the parents must work to exhaustion flying to and fro in search of food for their offsprings. This is generally done by both the males and the females. If misfortune is met by the mother bird, then the father bird becomes the sole nurse of the young.

Food of the Birds.

Birds have different likings as to food. On the basis of these likings birds may be divided into five groups as follows: (1) those that feed on animals and carrion, such as the owls monkey-eating eagles, vultures and hawks; (2) those that eat many kinds of food, such as the crows and storks; (3) those that depend upon fish and frogs for food, such as the gulls, terns, ducks, herons, egrets, pelicans, cormorants, kingfishers and ouzels; (4) those that live on fruits, such as the hill my-nahs, weaver birds, horn bills, tarictic, barbets, parrots, and pigeons; and (5) those that have a mixed diet of insect, fruit and grain of varying proportions, such as the tits, bulbuls, nuthatches, orioles, storling, thrushes, larks, sunbirds, pheasants, button quails, partridges, rails, cranes, bustards, waders and the flowerpeckers.

The flowerpecker, Decacidae is known to spread the seeds of *Loranthus Philippinenses* Char and Schleeht, and *Viscum Orientale* Willd, which are parasitic on forest trees. The maya and sparrow feed on grains of palay in the field and there are times when they become numerous and very destructive. The mixed-diet birds may be more harmful than beneficial because of their habit of eating fruits and grains, the first two, particularly, may be considered as being among the great enemies of foresters and farmers, respectively.

The Friends of Man.

Birds that greatly benefit man through the destruction of vast numbers of noxious insects injurious to his crop, are very good friends and deserve protection and help from him in return of their great services in checking outbreaks of insects.

Nearly all nestlings of the mixed-diet birds and of the insect-eating birds require enormous quantities of insects, such as caterpillars, slugs, grubs, wire-worms, maggots, flies, midges, moths, butterflies, mayflies, locusts, crickets, grasshoppers, beetles, weevils, and all the insects that destroy the forest and the crops of man. In short, even the birds of mixed-diet always need insects for the greater part of their diet. Only when the latter become scarce do they feed their yeung more on fruits and grains. Thus without birds, farmers and foresters would have a hopeless fight against insect pests.

The following birds feed mostly upon noxious animals and injurious insects.

The owl and the march hawk, familiar to every one, feed on mice, rats, insects and snakes. The swallow and the swift are great insect feeders gathering their food in the air and above water. The roller and the trogon pick worms and grubs from the ground and insects from the air; the barbet and carpenter bird hunt insects in the trunk of trees. The creeper looks for insect food in the bark of trees and in the soil. The wren and warbler eat grasshoppers. Nightjar chases moths and beetles. Tabon picks centipedes, insects aud crabs. Chestnut tailor bird, golden plover and steere's broad-bill and cyorri depend upon grubs and insects. Fly-catcher eats flies, mosquitoes and other insects. Titmouse, hedge sparrow, bush creeper, pied lalage wagtail, tree pipit, bee-eater, ground babbler wood-thrush magpie robin, hawk, cuckoo wood accentor, coucal, shrike, pied chat, and drongo, all feed on insects These birds fill their gizzards with insects three times a day at least.

Relation of Birds to man.

These already named predaceous birds are but a few among the many. They do more good for the foresters and farmers than all the sprays, insecticides and fungicides used in the forests, farms and orchards. These citizens of the air know the habits of the insects and hunt for them in their hiding places. They, therefore, serve admirably in the prevention of the undue increase of undesirable insects that feed on the plants upon which men are dependent for food, clothing and shelter, The effect of killing native birds in great numbers is now being felt

in the Philippines. This was noted during the outbreaks of (1) the coconut leaf-miners in Tayabas and other provinces; (2) the pine measuring worms in Baguio, and (3) the migratory locusts in the Visayas and Luzon.

Duty of Man to Birds.

These useful birds are entitled to protection from ignorant people who hunt and kill them thoughtlessly for sport and for fun. They should be given opportunities to build their nests by the preservation for them of strips of forest along rivers and ravines in cleared forest. In the open country trees should be planted along roads and trails. Foresters and farmers should encourage the presence of birds of this kind in plantations and nurseries by providing the birds with artificial nests in boxes containing holes, set in trees or on poles. On the other hand, the fruit and the mixed-diet birds should be discouraged in their multiplication to an injurious number by reducing them to a minimum in order to maintain the balance of nature.

Before birds may be judged as foes or as friends, it is necessary to know how they get their living. This can be learned without much effort by asking for the necessary information from keen observers, or by making a study of the habits of the birds. It is urged that every forester, game warden and student gathers valuable data on this subiect, and helps to teach the public the great economic and aesthetic value of beneficial birds so that the people may learn to understand, to love and to protect them.

— *The Makiling Echo, October, 1935.*

2. Observations on the Development of Buttress Roots:

Petch made observations on a few species of trees in Ceylon and drew the following conclusions: (1) Although, plant buttress, may be more general in tropical climates with abundant rainfall, they are not necessarily confined to such conditions; (2) The formation of buttress is not always a hereditary character; (3) The view that buttresses are produced by the tree in response to mechanical strains, which arise as a result of exposure to the wind, was not borne out by observation. Finally he made the following suggestions: (1) The presence of buttress roots is associated with a deficient tap root; (2) The formation of buttress roots is due to the restriction of the food and water currents to limited narrow regions of the stem continuous with lateral roots.

We have abundant species of trees with buttresses in the Makiling National Park and the above observations of Petch particularly his suggestious confirm most of my own findings. In the Makiling forest, trees with more or less permanent, big and well-developed unsymmetrically arranged branches and with crowns more or less irregular (sympodial) have prominent buttresses. On the other hand, trees with small, symmetrically arranged branches frequently shed by natural pruning, and the crowns are more or less symmetrical (monopodial) such generally do not have buttresses, or, if present, they are symmetrical. Trees with buttresses are those with big permanent branches, hence their tap roots are not sufficient for support. Buttress serves as prop to maintain the equilibrium of the tree or to keep it rigid.

Trees on different sites have been observed, and whether they are in coves, slopes or ridges, there seems to have a close relationship between the development of the buttress and the center of gravity of the crown (form point). It appears that if the vertical line which passes through the center of gravity of the crown coincides or nearly coincides with the axis of the bole, such tree has either symmetrical buttresses or they are absent. But if such line is away from the bole, the buttresses opposite the center of gravity are more developed. It may be observed on fast growing trees that if they are leaning or the crowns are uneven, the boles tend to become elliptical or fluted such that the major axes are parallel to and rapid growth opposite the direction of the lean. The tension opposite the centre of gravity on one side must be equal to the compression on the other to maintain equilibrium. Since irregular crowns disturb the equilibrium, the strain becomes greater on the side opposite the centre of gravity than the other side, the wood cells are stimulated thus demanding more food materials for growth, hence development on that side is more favourable than the other parts. This is confirmed by the fact that the buttress is formed due to the restriction of the food and water currents to limited narrow regions of the stem continuous with the lateral roots. The bending strain restricts the abundant food and water currents opposite the center of gravity and the buttress is more developed on that side than on the opposite side. This view, regarding restricted narrow regions, is supported further by the fact that the elements of compression wood in conifers have been observed to be broad compared with their lengths, while the wood elements opposite the *compression wood* are more or less elongated.

JUSTINO SEGUERRA.

— *Makiling Echo, April, 1936.*

3. Germination of Teak (Tectona grandis Linn. f):

By,

Norberto Denoga,

Division of Forest Studies and Research,

Bureau of Forestry.

The objects of the work according to the author, are (1) to determine what effects the depth of sowing, mulching, the treatment of soil and seeds have on germination of teak, and (2) to find out which method gives the highest percent of germination. The scope of the experiment includes the sowing of teak seeds on the surface, 1, 2, 3, 4, 5, 6, 8, 10 and 12 cm. deep on two separate plots, one without treatment and the other with a mixture of 33–1/3 per cent of decayed sawdust.

The obtein the best germination of teak in forest nurseries, the following conclusions ars presented:

(1) Seeds should be planted over or deeper than two centimeters.

(2) Seeds should be weathered in an open box pit or in an under-shade pit for at least 60 days before planting.

(3) The plot should be treated with 1/10 to 1/5 ash or leaf mold to hasten germination and accelerate growth.

(4) The planting should be made on porous and well drained plots to minimize mortality caused by damping-off.

(5) Mulching has no material effect and does not hasten germination of teak seeds sown two centimeters deep or deeper.

(6) Burning seeds with a light running fire does not hasten germination. On the other hand, it kills the seeds if fire is intense.

(7) Better germination results are secured for seeds sown during the rainy season than those planted before the rains come even if the plots are watered daily.

(8) Peat moss or horse dung does not hasten germination. On the contrary, it gives a much lower percentage of germination than untreated soil.

(9) Shelled seeds germinate very much faster but give a low percentage of germination.

4. Effect of Storage on the Germination of Large-leaf Mahogany Seeds (*Swietenia macrophylla*) King :

By,

Melicio Lepez of the Division of Forest Studtes and Research, Bureau of Forestry.

The objects of the work were three, namely, (1) to determine how long seeds of *Swietenia macrophylla* King can be stored without too much loss of viability ; (2) to find the best practical methods of storage so that the seeds will keep their viability ; and (3) to find the cause of the decrease of viability of stored seeds The results obtained by the author show that the seeds of this species could be kept viable for 132 days and could still give a germinative capacity of 70% if the seeds are stored in closed cans and burying some 40 cm. deep in the ground under a shade. There are other methods that gave more or less the same results, but the one mentioned above was found to be the best in points of practicability and economy. This method could be used to advantage in nursery and plantation work.

— *Makiling Echo, April, 1936.*

5. " Ascu " treatment of Timbers :

The less durable timbers when treated with proper preservatives can be rendered more durable and used for posts and other structrual constructions where steel and iron materials are used at present, and considerable saving of money can thereby be effected besides having other advantages. There are several processes, chief among them being treatment with " creosote " and " ascu ". It was found by a careful study and investigation that by using the *ascu* process there will be an appreciable saving of cost to Government without at the same time impairing the efficiency and strength of the treated timbers. The *ascu* process is the one developed by Mr. S. Kamesam, Wood Preservative Officer, Forest Research Institute, Dehra Dun, who holds the patent rights over it. It is a process by which a combination of arsenic oxide, copper sulphate, and potassium bichromate is injected into the timber under pressure. ....Government (of Travancore) purchased the patent from Mr. Kamesam on a royalty of Rs. 15,000 payable immediately and further a sum of Rs. 1,000 payable annually from the 6th year to the whole llfe of the patent ie., upto the 14th year. Government had also ordered that the timber treatment plant

should be ordered immediately and that arrangements should be made for getting a subordinate trained for the purpose at Dehra Dun under Mr. S. Kamesam.........

— *Administation Report, Forest Department, Travancore for 1110 M. E.*

6. Activity of the Italian Forestry Militia in 1935 :

A very interesting report has been received on work of the Forest Militia in the restoration of mountain land in Italy. During 1935, 13,168 hectares of denu ded land have been planted with trees, an area which has never been attained up to the present, and integral re-afforestation has been carried out over an area of 6,929 hectares. The restoration of mountain land extends over 1310 zones, in 88 provinces and is executed according to schemes planned by the Forestry Militia. Afforestation and re-afforestation work included the planting of 67 million plants and the sowing of 700,000 kg. of seeds of forest trees.

For the control of torrents, dams and other works in masonry have been constructed to a total of 343, 000 m^3. In addition, 611 km. of forest roads have been made and another 541 km. have been improved. A sum of 44 million lire has been spent on the above mentioned works.

The improvement of mountain pastures, which may be considered as completing these works, has received attention in proportion to its importance, as the State has given 2 million lire as a grant to owners (private and institutions) for restoring pasture land.

The action of the Forestry Militia has developed also : in the cemplex field of economic protection of 4 million hectares of land belongfng to communes and institutions — in the management of the "Azienda di Stato" for national forests, the balance sheet for the year closing with a net gain of 5 million lire,— in the application, in course in the majority of provinces, of the regime of restriction ("vincolo forestale") of a hydro-geological order — in the regular administration of the services of the Forestry Police.

During the 10 years of its existence, the Forestry Militia has utilised 500 million plants and 4,200,000 kg. of seeds of forest trees for the restoration and beautifying of the mountains and with a view to increasing home production of wood.

— *International Review of Agriculture, July, 1936.*

7. Speed Kings of the Wild. Birds' 2,200 Miles in 22 Hours :

[*Vultures with a speed of 150 miles an hour, gazelles that panic at nearly a mile a minute, and dogs that can chase a motor car at 40 m.p.h. These are some of Nature's speed merchants. Against them man is a sluggard. ranking with the elephant and the hippopotamus.*]

That the motor-car can beat all animal speed records is only true if we take into consideration racing cars eapable of doing well over 100 miles an hour. The aeroplane, of course, is in a class by itself. Even now cruising speeds of 150 to 200 miles an hour are common and we may see the day, perhaps not so far away as we think, when stratosphere fiying at 500 and more miles an hour will not be unusual.

Confining ourselves to the animal kingdom we find, however, that we have many a speed " ace " worthy of the name though man takes no place of prominence in the list. In fact, man is a veritable sluggard in the realm of speed. His average walking speed is on a par with that of the elephant—an animal which weighs from three to four tons as compared with man's few stones. Moreover in a race the elephant can outdistance most men as its top speed is about 25 miles per hour.

Vulture's 150 M. P. H.

If one has ever seen a dog running by the side of a motor-car at 30 or 40 miles an hour, a vulture coming to earth to a kill at a speed of 150 or more miles an hour, a snipe or a swallow doing a 100 miles an hour spurt or the lightning dive of a hawk as it swoops down on its prey, then one begins to realise how slow man really is.

Even lions, tigers and panthers can cover the ground for short distance at 40 miles an hour and the greyhound and the hare touch as much as 45 miles an hour.

Birds, of course, hold the records because they travel through the air instead of on the ground ; just as aeroplanes hold the record amongst human-controlled machines. Lammergeiers, the black-headed vultures of America, can do 110 miles an hour with ease and swallows and swifts are not far behind with 105 miles an hour.

Lapwings have been known to fly across the Atlantic Ocean at an average speed of 100 miles an hour. This was proved when some marked lapwings were liberated at Ullswater

in Cumberland, England, and shot in Canada only 22 hours later. The lapwing ordinarily is not such a fast flier, but on this occasion there was a 55 miles an hour gale blowing from east to west.

Trained homing pigeons have been known to average over 99 miles an hour on long distance fights up to 800 miles. Even the small birds like sparrows and finches often travel at 35 miles an hour.

The fastest travellers on land are. of course, the kangaroo and the jerboa, but they can only keep their speed up for short distances and are quickly run down by dogs and horses. Most gazelles have a panic speed of 50 miles an hour and the black buck as he leaps and bounds across thc open country often travels for short distances at 40 miles an hour.

Many snakes, despite the fact that they have no legs, can travel at astonishing speeds. The hamadryad, the cobra and the mamba of Africa are amongst the fastest and often travel at over 30 miles an hour. The hamadryad or king cobra, in particular, can outpace a horse and overtake a man running.

The question of distances covered by animals and birds — as apart from speed — is also interesting. The longest distance fliers amongst birds are the pelagic or ocean birds such as the albatrossess, petrels, gannets, kittiwakes and others. The great albatross is perhaps the record holder and moreover is seldom known to settle on the water as most other sea birds do.

* * * *

Kashmir to Ceylon.

Amongst land and inland water birds we all know of the regular yearly travels of ducks, partridges, quail, snipe, swallows and many others. Here in India these birds travel all the way from Kashmir and Tibet towards the beginning of winter; many of them going as far south as Madras Presidency and Ceylon. They return to the Himalayas again in the spring and after nesting again come south with their young.

Animals for the most part do not travel long distances, at the most going a hundred or so miles to new feeding grounds. The movements often take place as water becomes scarce in the hot weather.

But, to return to speed, why is it. one may ask, that man who has a light enough body and long enough legs, cannot get up much speed? Partly it may be due to his having only two legs instead of four, but mainly it is due to lack of streamlining. Man is very much in the same category as the elephant and

hippopotamus so far as streamlining is concerned. No matter how light in weight the hippo was he could never travel really quickly.

For speed the whole body from head to tail must be in the same plane and the more pointed the head and tall the better. This applies to all animals, birds and fishes. The sword fish is admirably constructed for speed and so is the tunny—known to be one of the fastest of fishes.

All birds (with a few exceptions such as the penguin) are streamlined and in the air the tail is much more important than on land. The better streamlined birds are the fastest. The long and narrow wings of the gulls, terns, waders, plovers and pfgeons are much more valuable for speed than the short wings of the rooks. titmice snd fianches.

Aviation closely studies the mechanics of bird flight. The slotted-wing device for stalling, the wind-shields on wheels, the monoplane's wing above instead of below the body weight are only a few instances to show that the aeroplane designer has learnt much from the birds — nature's greatest speed kings.

— R. J. S.

— *The Illustrated Weekly of India, 23–8–36.*

8. Carrying Timber's Message :

T. D. A. Exhibition Train Starts on its 1,300 Mile Journey.

Attached to an express bound for Bristol, which left Paddington Station, London, on Monday last, were the two T.D.A. exhibition carriages, starting on their 1,300 mile mission to educate the public on the beauty, value and uses of wood.

It was a novel train, and the light birch-faced carriages, with their brilliant blue lettering and attractive interiors, are certain to attract widespread attention before—at the end of twelve weeks—they are again pulled into a London terminus.

In a brief speech Earl De La Warr, Secretary to the Board said all preseut would agree that the Exhibition Train was a great idea for bringing home to people the merits of wood. They all knew the multitude of uses to which wood could be put, and it was certain that in the future many more would be found.

To-day, when there was much talk about the preservation of the countryside, the beauty and value of the timber house should be more widely known. It would be a most pleasant change to find handsome timber dwellings going up, rather than red-brick buildings.

He wanted to pass his humble congratulations to those who had had the enterprise to organise the Timber Train. At the present time they ought to be prepared to welcome any form of enterprise, which was essential if the trade of the country was again to be built up.

Before departing, the Parliamentary Secretary was handed a book of wood—its leaves consistiug of 37 different veneers—as a souvenir of the occasion. * * *

Grouped around the walls of the carriage are photographs showing, in the first case, how comfort came with wood and culture followed. There can be seen seventeenth-century oak panelling, a Chippendale bedstead in the Chinese style, and a chaise-longue in sycamore and red leather.

The next class shows how, by the use of wood, useful things can easily be made beautiful. There are exeellent photographs of a walnut coffer, made about 1500, a Chippendale ribbon-back seat, an eighteenth-century tea-table, and a Louis XII marquetry cabinet of dark and light woods.

Another class deals with the many steps between wood in its natural state and the finished product. There are valid photographs of felling, carting, cutting-up, and cabinet-making. Others show how wood is used in the construction of ships and coaches, the examples being a yacht, motor-boat, State barge, and eighteenth-century State coach.

To those interested in the timber dwelling the group showing examples of magnificent British houses, built of wood, will prove particularly fascinating. The photographs include the thirteenth-century roof on Great Hall, 8tokesey Castle Shropshire; a weather-boarded cottage in Kent; Litton Moreton Hall, Cheshire.

In order to prove that nothing is too mighty or too delicate to be made of wood, a photograph of a Strad violin is ranged alongside that of some huge harbour baulks.

Other examples include a farm wagon, the famous old "H. M. S. London," the fourteenth-century oak hammer-beam roof of Westminster Hall, and an early eighteenth-century pine door and doorway.

— *Timber Trades Journal, 4-7-36.*

9. A Longer Life for Poles :

Use of the Oxy-Acetylene Scouring and Charring Process.

The 12th International Congress of Acetylene, Oxy-Acetylene Welding and Allied Industries has been taking place at Caxton Hall, London, and one of the speakers, Mr. H. C. Morgan,

gave some striking information in a paper on the examination and preservatton of wood poles and the prolongation of their service life by the oxy-acetylene scouring and charring process. This is a process recently developed and put into use in Australia for treating electrical transmission, telegraph and telephone poles, as well as other timber structures set in or contacting the ground, with a view to the prevention and elimination of decay and deterioration caused by fungi, termites and other wood-destroying agents.

The process was developed in Melbourne by Allen-Liversidge. Up to the latter end of 1932 the process was commercially unknown. To-day over 80 treatment plants are in operation, approximately 150,000 poles have been treated, and to quote Mr. Morgan, 'the process has become standard practice by almost every pole-using authority in four Australian States."

In a recently published report by the Division of Forest Products of the Council for Scientific and Industrial Research in which the need is stressed for more efficient preservative methods (stated the author of the paper), it is estimated that the oost of poles at present used in Australia for annual renewals amounts to approximately £ 149,000, and that this cost can be expected in the future to rise to £ 322,000, assuming no variation in pole price. These figures are, however, based on the purchase cost of the pole only, which usually represents only a small proportion of the total cost of the pole in place. When, therefore, the additional cost of installation is taken into consideration—which includes the expense involved in dismantling and removing the old pole and erecting and refitting the new one—the total cost of annual replacements amounts to a very large sum.

Australian pole timbers have been divided by the authority mentioned into three classes as to durability, namely: Class 1—Very durable; Class 2—Durable; and Class 3—Less durable. From data supplied by pole users throughout Australia it is estimated that, in an untreated condition, Class 1 poles have an average service life of about 18 years, and Class 3 poles an average life of about 10 years, while the average life of Class 2 poles would be somewhere between these two, say, 14 years.

Judging from reports of the results of preservative treatment in other countries, as well as from indications given by poles which were treated by the oxy-acetylene scouring and charring method more than three years ago, it is considered by the author that by the effective treatment of new poles, both before erection and at regular intervals thereafter, it will in

many cases be possible to double the average untreated life above menttoned, while in the case of partly decayed poles, treated at intervals *in situ*, a material increase in service life is assured.

The oxy-acetylene scouring and charring process is applicable to new poles, both before and after installation, as well as to partly decayed standing poles, which are treated *in situ*. The treatment plant is portable, and equipment comprises cylinders, fitted with peessure regulators, and connecting hoses, containing oxygen, acetylene and CO_2 (carbon dioxide); tank containing creosote oil, fitted with hose connection, scouring torch, fitted with specially designed tip; charring torch, fitted with specially designed tip; spray gun, fitted with fine cone-shaped spray; special tools for examining checks and decay pockets; tools for the application of "wood surgery" i.e., plugging of knot holes, etc.; and a lock-up box for the stowing of the detachable equipment The selling price in Australia of the complete outfit is approximately £59.

Features of the Process.

The main objects and features of the process are :—

(a) (1) In the case of new poles, which are treated at the depot prior to installation—the examination and cleansing of the pole by "scouring" or burning out with the oxy-acetylene flame all cracks or checks and any visibly decayed areas, thus preparing the pole for the charring and spraying operations. (2) In the case of partly decayed poles, which are treated *in situ*—the examination and location of decayed areas (which are not always outwardly visible) and the scouring out of all checks and decay pockets, thus making it possible to determine the true condition of the pole and its fitness or otherwise for further service.

(b) In the case of all poles, the charring, by means of the oxy-acetylene torch, of the entire outer surface for a distance of about 12 to 18 in. below and 18 in. above the ground line, thus creating around the pole a protective layer of hard carbonised wood, or charcoal, which will not support fungal or insect life, and which provides a key or reservoir for the absorption and retention of the creosote preservative.

(c) The Spraying, under pressure, of the trimmed and charred area of pole with high grade creosote oil (the toxic properties of which are lethal and inimical to fungal and insect life), thus sterilising both the charred surface and the scoured-out checks and decay pockets, and protecting the pole against further attacks by wood destroying agents.

The process derives its effectiveness from the combination of the three main operations described. Each operation is the complement of the others; none would in itself be wholly effective, and all are necessary to success.

The paper included a statement on treatment costs, and a tabular statement showing the monetary savings effected by prolongation of service life of wood poles as a result of treatment. A fair average of the costs of treatment in Australia was : for new poles treated at depot prior to installation, total cost per pole 5 s. 6 d.; standing poles treated *in situ* while in service, 6s.; retreatment of standing poles, 3 s.

Since its development in Australia, inquiries relative to the oxy-acetylene scouring and charring, process have been received from many different parts of the world, including countries as far apart as Poland, Ceylon, and America, It seems possible therefore, concluded the author, that, though still in its infancy, this child of the gas industry born in Australia may later grow to universal proportions.

" The process may not, perhaps be remarkable enough to be regarded as one of the wonders of the oxy-acetylene world, but it can at least claim distinction as a novel and somewhat unexpected application of these gases. Few people would have imagined, even as recently as five years ago, that the oxy-acetylene flame—that conqueror of steel—would be directly applied in the preservation of timber."

— *Timber Trades Journal*, *27–6–'36.*

10. Lemongrass Cultivation and Distillation :

The lemongrass oil of commerce is derived from two species of grass, viz. *Cymbopogon flexuosus*, the Malabar or Cochin lemongrass, which is found in the Tinnevelli district and in Travancore of Southern India, and *Cymbopogon citratus*, which occurs in most tropical countries, especially in Ceylon, Burma, Java, Mauritius and the Malay Peninsula.

Lemongross flourishes under subtropical and tropical conditions, preferably at low altitudes, where the rainfall is fairly uniformly distributed throughout the year and the humidity of the atmosphere is high.

As regards soil conditions lemongrass is not very exacting, but makes more rapid growth on good well-drained soil such as sandly loam. Lemongrass, however, is cultivated in Ceylon and in Madagascar on poor soils and under fairly dry conditions.

In such cases, although it is stated that the oil is of a better quality, the yield is decidedly less; furthermore, it is not possible, owing to the slower growth, to cut the grass as frequently as that grown under better conditions.

Propagation of the plant is effected by division of the clumps. The portions separated, after shortening the leaves to about 3 in., are set out in rows about 3 ft. apart and at a distance of 1½ ft. in the rows. The spacing varies to some degree according to the nature of the soil, on rich soils the distance usually allowed being greater than on poor ones.

Prior to planting, the land should have been ploughed over and broken up to a fairly fine tilth. In some countries it is customary before planting to dig in a dressing of fertiliser or a leguminous crop. Planting should take place in the early spring or at the beginning of the rainy season, at a time when the soil is sufficiently moist not to require artificial watering.

During early growth the ground should be frequently hoed to check weeds and to conserve soil moisture. Besides having a retarding action on the growth of the plant, weeds introduced into the still with the cut lemongrass often result in an undesirable odour in the oil.

After the first year only slight cultivation is needed, since after it is well established lemongrass tends to retard weed growth.

Although lemongrass is not normally manured during growth, it has been advocated that a dressing of fertiliser, as soon as the plants have become well established in the field, is beneficial to the plant. An economical fertiliser is said to be one containing 4 per cent. nitrogen, 5 per cent. potash and 8 per cent. phosphoric acid, applied at the rate of 600 lb. per acre. This should be given as a side application and well worked in at the first cultivation.

The cutting of the grass may take place from four to nine months after planting, depending on the climatic and soil conditions of the localitv. The height of the grass when ready for gathering is about 2½ to 3 ft. The grass is cut by hand, using a sickle, about 9 in. above the ground-level. The number of cuttings varies from three to as many as seven gatherings per annum, according to the locality. The largest number of cuttings generally occurs in the second year of growth of the plant when it is in full vigour. After this there is a falling-off in the rate of growth of the clumps and a decrease in the oil content of the leaves and after three or four years it is found necessary to replant the area.

The yield of fresh grass per cutting is approximately from 4 to 5 tons per acre. Allowing for an oil content of 0·2 per cent. in the green material this yield is equivalent to 16 to 20 lb. of oil per acre. The oil content is, however, often higher than this, sometimes reaching as much as 0·5 per cent.

Regarding the immediate treatment of the grass after cutting there appears to be some difference in opinion. Experiments in Malaya showed that by semi-drying the grass and hence saving labour in removing it to the still, there was no decrease in the quality or yield of the oil. It was therefore, recommended that after cutting, the lemongrass should be spread out and allowed to dry for a few days, the loss in weight after 4 to 5 days being as much as 60 to 65 per cent. If the grass was piled, heating and fermentation ensued affecting both the yield and quality of the oil. On the other hand. experiments in the United States showed a considerable loss of oil on drying, although there was no effect on the citral content of the oil. It is usual, in many of lhe countries where the grass is grown commercially to distil the fresh material as soon as possible after gathering.

The oil is recovered from the grass by the process of steam distillation. Up-to-date plant for this purpose consists essentially of three parts : (a) a boiler for raising steam ; (b) a still in which the grass is packed : and (c) a condenser in which the mixed vapours of steam and oil are condensed. In view of the quantity of water required for the condenser the site of the still should be close to a regular water supply. The still, which should be made either of copper or iron (preferably enamel lined), is packed fairly full and steam passed in. The time taken for the distillation of one charge of grass should not be longer than four hours.

The mixture of condensed oil and steam is separated as far as possible in a separating funnel or other suitable apparatus. The oil should be stored in well-filled air tight containers in as cold a place as possible until ready for shipment. For transport the oil can be packed in tins or tinlined iron drums without injury.

— *Bulletin of the Imperial Institute, Vol. XXXIV, No. 1.*

Notifications relating to Rangers.

Waltair Circle.

13—8—36. Mr. D. Ramakrishniah, Parlakimedi Maliahs Division (Orissa Province) on expiry of his leave posted to Vinukonda Range, Guntur Division, Waltair Circle, (Madras Province.)

13—8—36, Mr. J. D. Theodore, posted to Gudem Agency Range, (Narasapatom Railway Station) Vizagapatam Division.

20—8—36. Mr. Sambasiva Rao Naidu, Ranger Fifth grade, granted leave for 3 months from 9th August 1936.

24—9—36, Mr. B. Kotilingam will be on special duty under the District Forest Officer, Guntur, from 16-9-36.

28—9—36. C. T. Tiruvengadam, Ranger Third grade, to Bezwada Range.

14—10—36. Mr. S. Ratnavelu Mudaliar, on expiry of leave, on 7-11-36 posted to Repalle Range, Guntur District. (2) Mr. M. B. Madappa, Forester First grade, on relief by No. 1, posted to Lakkavaram, Godavari Upper Divisfon. (3) Mr. P. Chengalreddi, on relief by No. 2 posted to Palakonda Range, Vizagapatam District. (4) Mr, Ch. Ramamurthi, on relief by No. 3, to special duty in Gudem for classification of reserve into special and ordinary.

15—10—36. Mr. I. Sambasivarao Naidu, on expiry of leave posted to Rapur Range, Nellore District. (2) K. Subbanna, Forester Third grade, on relief hy No. 1 will be on special duty in Nellore.

Bellary Circle.

2—8—36. Ansar Badsha Sahib, Trained Forester, and acting Ranger last grade posted to the charge of Dornal Range Kurnool Eaat Divisien, (2) Mr. S. Sankaran Ranger Fifth grade on relief by No. 1, transferred to Markapur Range in the same division of which he is now in additional charge,

2—8—36. Mr. B. Krishna Rao, Kurnool East division granted extension of leave for 3 months from 10-7-1936.

20—8—36. Mr. B. T. Seetharama Iyer, Cuddapah North division on expiry of his leave on 1-9-36 posted to Hospet Range Anantapur divisiou, (2) On relief by No. 1 Mr. A. Ranganayakulu Naidu, transferred to Kanigiri Range, Kurnool South division vice, Mr. M. Umapathi Mudaliar Ranger Seventh grade who has applied for leave.

25—8—36. Mr. M. Umapathy Mudaliar, Kanagiri Range of Kurnoos South division granted leave on average pay for four monthl from date of relief,

29—9—36. K. Tiruvenkatachary, on expiry of his leave on 6-10-36, reposted to Sivapuram Range, Kurnool West division.

4—10—36. Mr. S. Pitchayya Naidu, officiating Ranger last grade. in charge of Sivapuram Range, Kurnool West division on relief by Mr. K. Tiruvenkatachary, reposted to that Range, is transferred to Gundlabrahmeswaram Range in the same division. (2) Mr. B. Venkatarangam, Forester First grade in charge of Gundlabrahmeswaram Range on relief by No. 1 will revert to his permanent post as forester in the same division.

9—10—36. A. Bhaviah, Ranger Fourth grade, in charge of Giddalore Range, Kurnool South division is granted leave on average pay on medical certificate for two months from the date of relief. (2) Mr. B. M. Bopayya, trained forester, Kurnool South diyision is posted to the charge of Giddalore Range. To join expeditiously.

Salem Circle.

25—8—36. Mr. M. P. Philip, Polur Range, Vellore East division, granted leave on average pay for three months from date of relief. (2) Mr. S. A. Dawson. Salem South division, on return from leave on 1-9-1936, posted to Palmaner Range, Chittoor division. (3) Mr. B. S. Ramaswami Ayyar, Ranger Fourth grade, Palmaner Range, Chittoor division, on relief by No. 2 transferred to Vellore East division to Polur Range, *vice* No. 1, granted leave or until further orders. (4) Mr. A. Yagnaswami, Trained Forester Fifth grade and till recently acting as Ranger last grade in the leave vacancy of Mr. P. Shunmugasundaram Pillai (Temporary Ranger Seventh grade), will continue to act as Ranger last grade - *vice* No. 1 granted leave or until further orders.

30—8—36. B. V. Vaideeswara Ayyar, (*sub-protem*) Tiruvannamalai Range, Vellore East division will take charge of Polur Range from Mr. M. P. Philip granted leave and be in additional charge of Polur Range till relieved by Mr. B. S. Ramaswami Ayyar.

13—9—36. Mr, T. K. Parthasarathi Ayyangar, Salem South division, on return from leave on 16-9-1936 posted to Vellore Range (newly formed), Vellore East division, relieving Mr. M. Manickam Pillai, Odugathur Range, in addition charge.

17—9—36 Consequent on the return from leave of Mr. T. K. Parthasarathi Ayyangar on 16-9-1936, Mr. C. B. Ekambaram, Trained Forester Second grade and acting Ranger last grade, in charge of Rasipuram Range, Salem South division, will continue to act as Ranger last grade, with effect from 16-9-36 *vice* Mr. M. S, Krishnaswaml Ayyar, Ranger Sixth grade on leave, or until further orders.

17—9—36. Mr. R. Manickam Pillai, Odugathur Range, Vellore East division, will be in additional charge of the new Vellore Range from 1—9—1936. till relieved by Mr. T. K. Parthasarathi Ayyangar.

25—9—36. Mr. P. B. Syed Yahia Saheb, Salem Central division, on return from leave on 1—10—1936, posted to special duty in the same division, as a temporary measure.

9—10—36. Mr. K. M. Gopalachari, Dharmapuri Range, granted leave for 4 months with effect from 1-11-1936, preparatory to retirement. (2) Mr. M. B. Kalappa, Trained Forester First grade and Temporary Ranger Seventh grade in charge of Anchetti Range will hold additional charge of Dharmapuri Range until further orders.

18—10—36. Consequent on the expiry of leave of Mr. P. B. Syed Yahia Saheb, on 1-10-1936, Mr. C. B. Pemmiah, Trained Forester Second grade and acting Ranger last grade in charge of Harur range, Salem Central division, will continue to act as Ranger last grade, with effect from 1-10-1936 *vice* Mr. T. S. Ramalinga Ayyar, Ranger Seventh grade under suspension or until further orders.

Coimbatore Circle.

22—7—30. Mr. R. Rama Ayyar, Coimbatore North division granted extension of leave for 2 months from 8-7-1936 in continuation of the leave for one month from 8-6-36 granted to him.

1—9—36. Mr. C. Thiruvengadam Pillai, on expiry of his leave, posted to Coimbatore South division.

7—9—36. T. D. Ponniah, Kuttalam Range, posted as Senior Instructor, Vernacular Training School, 1936-37, to be held in Coimbatore South division. (2) Mr. M. D. Pichai Pillai (Madras Forest College trained Forester), Coimbatore South, posted as Assistant Instructor, Vernacular Training School. (No substitute can be appointed in his place),

14—9—36. Mr. Maragathavelu, Forester First grade, Madura division, posted to charge of Kodaikanal Range in relief of Ranger K. O. Anandan granted leave for two months.

22—9—36. Mr. C. Thiruvengadam Pillai. granted extension of leave for 4 months from 9-9-1936 in continuation of the leave for 3 months and 29 days granted to him.

7—10—36. Mr. V. Panchapakesa Ayyar, M. R. H. Forester, Coimbatore South division promoted to act as Ranger Seventh grade, *vice* Ranger S. Sundaravaradachari, granted leave up to 14-11—1936 and posted to join duty under " District Forest Officer Kollegal " for Range charge at District Forest Officer's convenience.

7—10—36. Trained Forester T. R. Rajagopalan, acting as Ranger Seventh grade, Coimbatore South division, will continue to act as Ranger in an existing vacancy with effect from 2-10-1936. (2) Trained Forester M. D. Pichai Pillai who has been posted as Assistant Instructor, Vernacular Training School, Coimbatore South division, will act as Ranger Seventh, *vice* Ranger C. Thiruvengadam Pillai granted leave up to 9-1-1937. This order will take effect from the date the Forester joins duty in vernacular Training School,

12—10—36. Mr. R. Rama Ayyar, Coimbatore North division, granted extension of leave for 2 months, till 7-12-36.

Ootacamund Circle.

24—7—36. Mr. B. M. Coates, Sigur Range, the Nilgiris division, granted leave for two months from date of relief.

23—8—36. Mr. K. Dhooma Shetty, on return from leave posted to Sigur Range, the Nilgiris, division *vice*, Mr. B. M. Coates granted leave. (2) Mr. P. A. Madhavan, Assistant Range Officer, Nilambur posted to the charge of Sultan's Battery Range, Wynaad division, in relief of Trained Forester Mr, P. K. Sankara Menon.

31—8—36. Mr. P. K. Sankara Menon, Trained Forester, in charge of Sultan's Battery Range, on relief by Mr. P. A. Madhavan will be attached to Begur Range, Wynaad division as Assistant to the Range Officer, Begur. (2) Mr. K. M. Achayya, Trained Forester and Assistant to the Range Officer, Begur, on relief by No. 1 transferred to Nilambur division.

26—9—36, Mr. A. Mohamed Akbar, Ranger Seventh grade and Assistant Range Officer, Chedleth, transferred to Kannoth Range, Wynaad division. (2) Mr. M. Mandanna, Kannoth Range, on relief by No. 1 transferred to Mannarghat Range, Palghat division. (3) Mr. Marcel D'Souza, Trained Forester, in charge of Mannarghat Range on relief by No. 2 posted as Assistant to the Range Officer, Chedleth, Wynaad division.

30—9—36. Mr. B. Krishna Rao, posted to Shankaranarayana Range, Mangalore North division. (2) Mr. A. N. Ponnayya, Shankaranarayana Range, on relief by No. 1 posted for special duty in Nilambur division.

NOTICE.

Indian Forester Prize — 1937.

Essay for the PAST and PRESENT Students of the College.

Although every endeavour has been made in the past to set subjects for essays which will appeal to past and present students respectively, the number of entries has been disappointingly small in recent years, and the element of competition has been nearly absent.

Accordingly only one subject, common for both past and present students, is set for 1937 viz., —

"The Minor Forests: How can they be Better Protected and Improved?"

If there are sufficient entries to warrant it, the prize will be awarded as follows :—

First Prize Rs. 30/- in cash ; 2nd Prize Rs. 20/- in cash.

No award will be made unless a satisfactory standard is reached. The essay should be clearly written or typed on one side of the paper only and should not exceed 2000 words. It should be submitted to reach the Principal, Madras Forest College, between the 10th May and 1st June 1937. Any not received within this period will not be considered. The essay should be the unaided work of the competitor.

P. W. DAVIS,
Principal.

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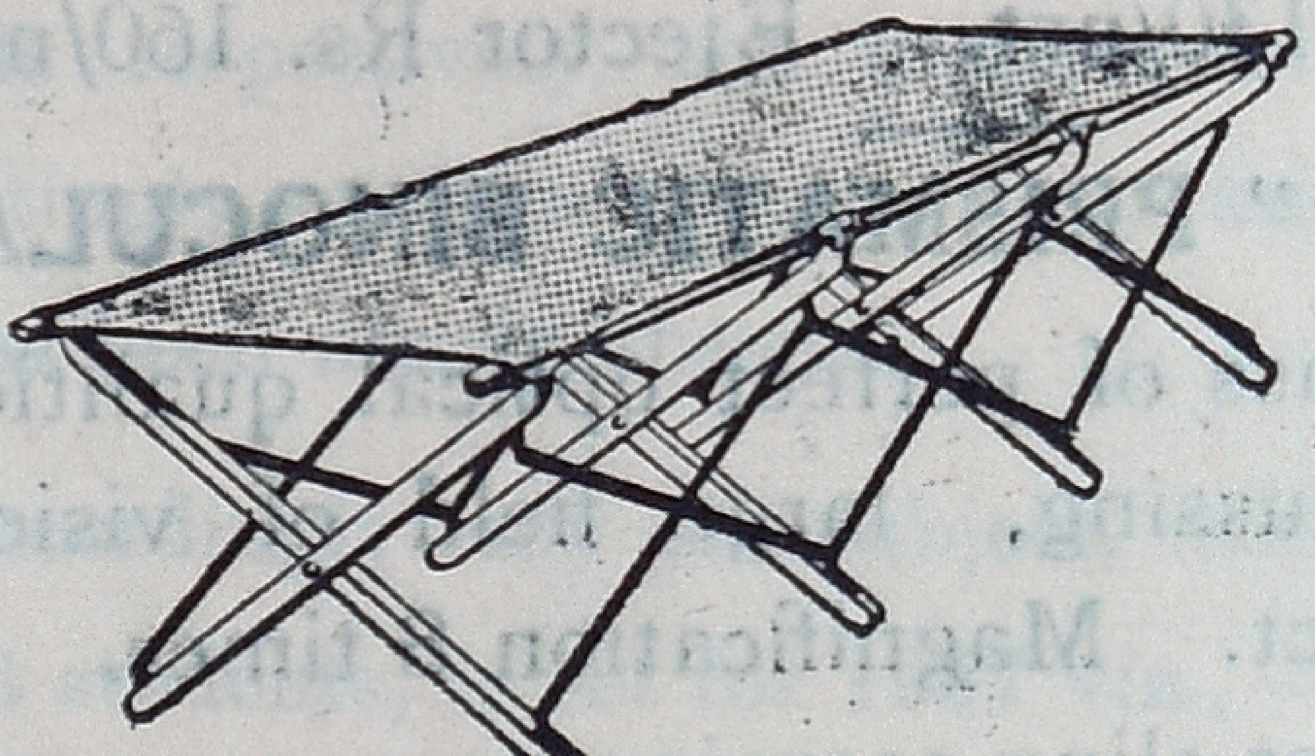

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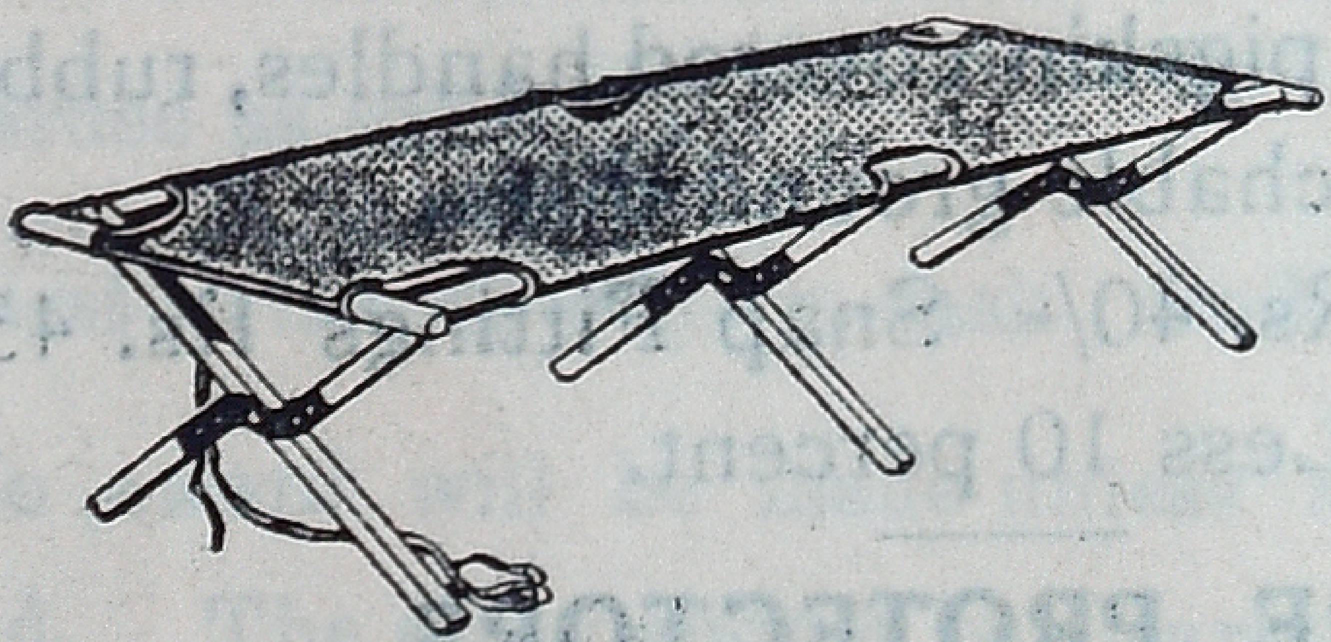

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